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ABSTRACT

An ongoing concern for educators is the identification of factors that contribute to or are associated with academic achievement; one such group of variables that has received little attention are those involving stress. The relationship between perceived sources of stress and academic achievement was examined to determine if reactions to stress and methods of coping with stress were related to academic achievement. Freshman and sophomore junior college students completed Form III of the Floyd-Steyert Life Stress Inventory to measure three categories of stress self-report: sources of stress, emotional and physiological responses to stress, and methods chosen to cope with or adapt to stress. Several sources of stress (physical handicaps, chronic illness, in-laws, financial assistance, parents, living arrangements, irrelevant courses, instructors, academic advisement), responses to stress (dry throat, diarrhea, aggravation, back pains, fatigue), and methods of coping (running away, hobbies, drinking) appeared to affect academic achievement. Results suggest that perceived stress is related to academic achievement. (NRB)

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STRESS CORRELATES AND ACADEMIC ACHIEVEMENT

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An ongoing concern for educators is a search for factors that contribute to or are associated with academic achievement. A class of variables that have received little attention are those involving stress. Wall, Floyd, and Steyert conducted an investigation (1980) to determine if academic achievement is related to self-reports of perceived stress. Their basic question was, "Are those (students) who report certain types of stress more successful academically?"

Students often comment that the college experience can be stressful, but Wall, et. al., pointed out that few studies have investigated student reports of sources of stress and how students attempt to cope with it.

Although stress may be defined in a variety of ways, the following explanation by McGrath (1970) lends support to studying stress variables through a self-report instrument. McGrath said in definition that stress occurs when there is a considerable imbalance between perceived or subjective demand and perceived response capability. A person is not threatened by demands in which the person feels capable of handling without undue expenditure of resources. A person is threatened by the anticipation that he or she will not be able to cope with perceived demands adequately. Using this view of stress as a base, it logically follows that a valid way to determine the causes of stress is to ask a person what they are.

Wall, et. al., believed that if certain coping methods are related to higher academic achievement, the information could be used by college faculty and counselors to help students in adjusting to college life. In their investigation, these authors completed a multiple regression analysis of stress sources (self-report) and their relationship to first year grade point average. Their data source was 1600 incoming freshman who responded to Form I of the Floyd-Steyert Life Stress Inventory. The respondents were students at a medium-sized state university located near a large middle-Atlantic metropolitan center.

Low, but significant zero-order correlations were found between both verbal and quantitative Scholastic Aptitude Test scores and grade point average. However, these predictor variables accounted for only 11 to 15 percent of the variance in grade point average. Obviously, test scores and past academic experience are predictors of academic achievement, but there are many other factors that relate to it.

Wall, et. al., found self-reported sources of stress contributing to a significant Multiple R. Those sources were dating, study habits, parents, and siblings, leading to the condlusion that perceived areas of stress are related to academic achievement.

Purpose of the Present Study

The purpose of the present study was to further investigate the hypothesis that perceived sources of stress are related to academic achievement. In addition, an attempt was made to determine if reactions to stress and methods of coping with stress are related to academic achievement. A secondary hypothesis was that "dysfunctional" (unhealthy) methods of coping with stress are related to lower academic achievement.

Method and Data Source

About 800 freshman and sophomore students in intact classes responded to Form III of the Floyd-Steyert Life Stress Inventory. They were enrolled in a small non-residential junior college in rural Georgia. This college has an open-door admissions policy. Data collection proceded from the summer of 1980 to the winter of 1981. Responses were marked on IBM 1230 optical scanner as in the Wall, et. al. study.

Of the 800 responses, almost 500 had to be discarded because of improper markings of responses or blanks. Sixty percent of the remaining data source were female The Statistical Package For the Social Sciences was chosen for a multiple regression analysis. The criterion variable was grade point average for the quarter in which students responded to the inventory. There were more than 90 predictor variables including SATV and SATQ.

Form III of the inventory includes three categories of stress self-report: sources of stress (as in Form I), emotional and physiological responses to stress, and methods chosen to cope with or adapt to stress.

Variables were entered into the equation on a forward (stepwise) inclusion. With this method, the simple (zero-order) r that correlates most highly with the criterion variable is entered first. Other variables that next correlate most highly with the criterion variable are entered in turn. This method finds which variables that contribute the most over and above the correlation of all others relative to the criterion variable.

Results

The Multiple R was significant at the .05 level. As was expected, SAT verbal correlated most highly with grade point average with a simple r of .36 accounting for 13 percent of the variance in grade point average.

This result is in contradiction to the Wall, et. al. study which found SAT Quantitative as the best predictor of all variables entered with a simple r of .39 or 15 percent of the variance attributed to skills measured by SATQ. In the persent study SATQ and GPA achieved a simple r of .26 or only 7 percent of the variance of GPA. Summary Statistics are found in Table 1.

With SAT verbal removed, "femaleness" was the next best predictor of grade point average. In keeping with the results of the former study, several stress sources from the inventory contributed to the Multiple R after SATV and "femaleness" had been removed. In addition, emotional and physiological responses to stress and methods chosen to adapt to stress were also predictors of GPA (Table 2).

From the first category; sources of stress, the following contributed to the Multiple R: physical handicaps, chronic illness, in-laws, financial assistance, parents, living arrangements, irrelavance of courses to goals, instructors and academic advisement.

From the second category: emotional and physiological responses to stress, the following contributed to the Multiple R: dryness of the throat, diarrhea, being aggravated, back pains, and general fatigue.

From the third category; methods chosen to respond to stress the following contributed to the Multiple R: running away, engaging in hobbies, and drinking alcoholic beverages.

Conclusions and Discussion

Numerous past investigations have found aptitude test scores and former academic achievement to be predictors of college grade point average. This study was no exception. However, SATV and SATQ accounted for only a small percentage of the variance in grade point average. A number of stress

TABLE 1

Summary Statistics

Variable	Cases	Mean	Std. Dev.	r with GPA	p	Category		
						Source of Stress	Reaction	Chosen Adaptation
Prior College Attendance	311	.504	.782	.102	.035			
SATQ	313	399.78	88.07	.26	.000			
SATV	313	408.35	97.69	.36	.000			
Female	313	1.59	.491	.25	.000			
		Survey Items						
Physical Handicaps	308	.441	1.15	.12	.01	X		
Chronic Illness	308	.513	1.31	.16	.002	X		
In-laws	309	.563	1.45	.05	.15	X		
Financial Aid	312	.067	.85	-.23	.000	X		
Running Away	310	1.61	1.64	.14	.005			X
Parents	311	2.40	1.92	-.03	.26	X		
Off-Campus Living	310	.49	1.37	-.04	.02	X		
Drinking Alcohol	313	1.38	.81	.16	.002			X
Dryness in Throat	311	.765	.861	.11	.02		X	
Irrelavance of Courses to Goals	312	1.13	.844	.11	.02	X		
Engaging in Hobbies	312	.775	.798	-.09	.04			X
Experiencing Diarrhea	311	2.85	2.10	.06	.119		X	
Being Aggravated	309	2.94	1.79	-.07	.08		X	
Instructors	311	.675	.831	-.07	.08	X		
General Fatigue	312	1.68	.844	.03	.27		X	
Academic Advising	313	1.26	.777	.06	.12	X		

TABLE 2

Summary Of Multiple Regression Analysis
With One Quarter Grade Point Average As The Dependent Variable

Variable	Multiple R	R Square	RSQ Change	Simple r
SATV	.364	.133	.133	.364
Female	.428	.183	.050	.250
Physical Handicap	.454	.207	.023	.131
SATQ	.487	.237	.013	.269
Chronic Illness	.500	.250	.012	169
In-Laws	.514	.264	.014	.063
Financial Aid	.526	.276	.011	.235
Running Away	.534	.285	.008	.148
Parents	.546	.298	.012	-.04
Off-Campus Living	.553	.306	.008	-.044
Drinking Alcohol	.560	.314	.007	.166
Dryness in Throat	.566	.321	.007	-.198
Irrelavance of Courses to Goals	.574	.329	.008	.115
Engaging In Hobbies	.579	.336	.006	-.096
Experiencing Diarrhea	.586	.344	.008	.07
Being Aggravated	.597	.356	.012	-.08
Instructors	.602	.363	.006	-.073

predictors did improve the Multiple R, leading to the conclusion that perceived stress is indeed related to academic achievement. By adding the other categories from Form III of the inventory, a step was made in the direction of finding what emotional and physiological reactions to stress and what characteristic responses to stress are related to grade point average.

The hypothesis that "dysfunctional" reactions to stress are related to grade point average was not confirmed. Only two of these predictors contributed significantly to the Multiple R. They were "running away and "drinking alcoholic beverages." It is interesting to note (Table 2) that both of these zero-order coefficients were positive and although significant, were extremely low.

Of particular interest were adaptations such as "abuse others," "act impulsively," "act out anger," and "take drugs.' They did not contribute to the Multiple R. It is also interesting to note (Table 1) that sources of stress contributed more than the other two categories (nine entries) with only three for emotional and physiological reactions and four for chosen responses to stress.

As Wall, et. al., pointed out, if it can be determined that stress is significantly related to academic achievement and if certain coping mechanisms are employed by more successful students, the information can be of value in counseling with students. This study is another step in that direction.

Limitations and Future Considerations

One of the major limitations of this brief study was the unavailability of the data source. It was not possible to present the inventory at one time during an orientation session as in the Wall, et. al. effort. Data was collected over a period of nine months in individual classes.

Several persons were involved in data collection. Instructions were occasionally misunderstood and perhaps contributed to the loss of valid responses leaving about 300 for processing. In the Wall, et. al. study, the criterion variable was first year grade point average. Here, it was only one quarter; that in which the responses were made.

Some differences would be expected between these two types of data sources (four-year university and rural community college). The zero-order correlations between SAT and GPA were small. Even taking these conditions into account, the study nevertheless confirmed again that achievement scores are predictors of grade point average. The problem of accounting for remaining variance is still at hand, but it is beginning to appear that stress is a part of it.

This study did not show that "dysfunctional" variables are related to academic success, but the result does not in itself mean that they are not. All that is known at this point is, to quote Kerlinger and Pedhazur (1973),[b] "... variables (are) interacting in unknown ways ...." The variables in this study may be measuring the same "thing."

The next logical step, then, is to look for a basic structure of perceived stress sources, reactions to stress, and methods of coping with stress. If it can be determined "the ways these stress variables cluster and influence each other," (Kerlinger, 1973) it may be found what sources of and adaptation to stress can enhance or lower academic achievement.

So far in these two investigations, a priori variables have been used. A priori variables are defined as "...variables measured by instruments <u>assumed</u> to measure the variables...," (Kerlinger and Pedhazer, 1973).[a] A worthy task, now, may be to actually <u>determine</u> the variables. The difference is subtle, but important.

The plan is to determine from the list of variables in this study those assumed to be "dysfunctional" reactions to stress and unhealthy methods of coping. The hope is to find an underlying structure rather than a mere relationship. This can be accomplished by factor analysis. If the many variables collected for this study can be shown to reduce to a few unities or underlying variables, these new factors can be used in a variety of ways for further studies on the relationship of stress to academic achievement. In this way, perhaps the secondary hypothesis of this study can be confirmed or rejected and some basic structure of perceived, self-reported stress may be found.

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